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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,359	10/23/2001	William P. Delaney	01-021	2012

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EXAMINER

TRAN, DENISE

ART UNIT	PAPER NUMBER
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2185

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/057,359	Applicant(s) DELANEY, WILLIAM P.	
	Examiner Denise Tran	Art Unit 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/22/05.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
4a) Of the above claim(s) 13-20,33 and 34 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4,6,8-10,12,21-24,26 and 28-32 is/are rejected.
7) ☒ Claim(s) 5,7, 25, and 27 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 23 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The applicant's amendment filed 12/22/05 has been considered. Applicant's election without traverse of group I, claims 1-12 and 21-32 during the telephone conversation with Peter Scott (Reg. No. 33,279) on 2/28/05
2. Claims 13-20 and 33-34 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected non-elected invention, there being no allowable generic or linking claim. Election was made **without** traverse during the telephone conversation with Peter Scott (Reg. No. 33,279) on 2/28/05.
3. Claims 1-10, 12 and 21-32 are presented for examination. Claim 11 has been canceled.
4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
5. Claims 1-4, 6, 8, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kilner, U.S. Patent No. 5,649,089.

As per claim 1, Kilner teaches the use of a mirrored storage volume system, capable of incoherency correction, comprising

a primary storage controller capable of managing data, wherein the primary storage controller is capable of cyclic redundancy checking stored data (e.g. figure 1, element Active controller and col. 4, lines 1-50);

a primary storage volume suitable for storing data, wherein the primary storage volume is linked to the primary controller (e.g. abstract, fig. 1.1) such that, the primary storage controller is capable of cyclic redundancy checking data stored on the primary storage volume (e.g. figure 1, element Active controller and col. 4, lines 1-50);

a secondary storage controller capable of accepting transferred data from the primary storage controller, wherein the secondary controller is capable of cyclic redundancy checking stored data (e.g. figure 1, element 115 and col. 5, lines 45-65 and et seq.);

a secondary storage volume linked to the secondary storage controller wherein the secondary storage volume is capable of storing data mirroring the primary storage volume (e.g. abstract; col. 2, lines 30-40); and

a communication channel linking the primary controller to the secondary controller wherein the communication channel is suitable for communicating data transfers (e.g. figure 1, element 117, 11, 113; col. 2, lines 30-35).

As per claims 2-3, Kilner teaches wherein the primary storage controller initiates a cyclic redundancy check of the primary storage volume upon reestablishment after an

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interruption in the communication channel (e.g., fig. 3, els. 310, 312,326, 320; col. 5, lines 1-45); and the primary controller is capable of comparing the primary cyclic redundancy check scan with a secondary storage volume cyclic redundancy check scan ((e.g., fig. 3, els., 304, 312; col. 5, lines 1-45)

As per claim 4, Kilner teaches the secondary storage controller initiates a cyclic redundancy check of the secondary storage volume upon reestablishment after an interruption in the communication channel (e.g., col. 1, lines 20-27; col. 5, lines 1-8; and col. 5, lines 55-65 and et seq.)

As per claim 6, Kilner teaches the primary storage controller initiated a cyclic redundancy check scan at a set time period (e.g., fig. 3, el. 312; col. 2, lines 50-60; col. 4, lines 55-66)

As per claim 8, Kilner teaches the use of the primary storage controller is capable of directing the primary storage volume to read and write data (e.g. col. 3, lines 45-67; col. 4, lines 5-20).

As per claims 10 and 12, Kilner teaches a volatile memory linked to the primary storage controller, wherein the volatile memory is configured to maintain a coarse grain bit map if the communication channel is interrupted ((i.e., bit data representing changes having occurred, e.g., col. 3, lines 35-65; fig. 3, els. 310, 312,326, 320; col. 5, lines 1-45) and the coarse grain bit map contains data representing changes to the primary storage volume (e.g. col. 3, lines 35-65; col. 5, lines 1-45).

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kilner, U.S. Patent No. 5,649,089 as applied to claim 1 above, and further in view of Yanai et al., U.S. Patent No. 5,742,792, hereinafter Yanai.

As per claim 9, Kilner does not explicitly show the second storage volume is geographically remote from the primary storage volume. Yanai teaches the use of the second storage volume is geographically remote from the primary storage volume (e.g. col. 8, lines 35-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Yanai into the system of Kilner because it would provide complete data recovery in case of disasters destroy one physical location as taught by Yanai (e.g. col. 8, lines 35-50).

8. Claims 21-24, 26, 28, and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilner, U.S. Patent No. 5,649,089, in view of Howard et al., U.S. Patent No. 6,629,198, hereinafter Howard.

As per claim 21, Kilner teaches the use of a mirrored storage volume system, capable of incoherency correction, comprising

a primary storage controller capable of managing data, wherein the primary

storage controller is capable of cyclic redundancy checking scan of stored data (e.g. figure 1, element Active controller and col. 4, lines 1-50);

a primary storage volume suitable for storing data, wherein the primary storage volume is linked to the primary controller (e.g. abstract, fig. 1.1) such that the primary storage controller is capable of conducting cyclic redundancy checking scan on data stored on the primary storage volume (e.g. figure 1, element Active controller and col. 4, lines 1-50);

a secondary storage controller capable of accepting transferred data from the primary storage controller, wherein the secondary controller is capable of cyclic redundancy checking scan of stored data (e.g. figure 1, element 115 and col. 5, lines 45-65 and et seq.);

a secondary storage volume linked to the secondary storage controller wherein the secondary storage volume is capable of storing data mirroring the primary storage volume (e.g. abstract; col. 2, lines 30-40); and

a communication channel linking the primary controller to the secondary controller wherein the communication channel is suitable for communicating data transfers (e.g. figure 1, element 117, 11, 113; col. 2, lines 30-35).

Kilner does not specifically show the use of the controllers performing at least one of a MD-5 and a SHA-1. Howard shows the use of performing at least one of a MD-5 and a SHA-1 (e.g., col. 3, lines 47-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Howard with

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Kilner because it would provide for a more robust hashing function, as taught by Howard (e.g., col. 3, lines 47-65).

As per claims 22-23, Kilner teaches wherein the primary storage controller initiates a cyclic redundancy check scan of the primary storage volume upon reestablishment after an interruption in the communication channel (e.g., fig. 3, els. 310, 312, 326, 320; col. 5, lines 1-45); and the primary controller is capable of comparing the primary cyclic redundancy check scan with a secondary storage volume cyclic redundancy check scan ((e.g., fig. 3, els., 304, 312; col. 5, lines 1-45). Kilner does not specifically show the use of the controllers performing at least one of a MD-5 and a SHA-1. Howard shows the use of performing at least one of a MD-5 and a SHA-1 (e.g., col. 3, lines 47-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Howard with Kilner because it would provide for a more robust hashing function, as taught by Howard (e.g., col. 3, lines 47-65).

As per claim 24, Kilner teaches the secondary storage controller initiates a cyclic redundancy check of the secondary storage volume upon reestablishment after an interruption in the communication channel (e.g., col. 1, lines 20-27; col. 5, lines 1-8; and col. 5, lines 55-65 and et seq.). Kilner does not specifically show the use of the controllers performing at least one of a MD-5 and a SHA-1. Howard shows the use of performing at least one of a MD-5 and a SHA-1 (e.g., col. 3, lines 47-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine Howard with Kilner because it would provide for a more robust hashing function, as taught by Howard (e.g., col. 3, lines 47-65).

As per claim 26, Kilner teaches the primary storage controller initiated a cyclic redundancy check scan at a set time period (e.g., fig. 3, el. 312; col. 2, lines 50-60; col. 4, lines 55-66).

As per claim 28, Kilner teaches the use of the primary storage controller is capable of directing the primary storage volume to read and write data (e.g. col. 3, lines 45-67; col. 4, lines 5-20).

As per claims 30-32, Kilner teaches a volatile memory linked to the primary storage controller, wherein the volatile memory is suitable for maintaining a coarse grain bit map (i.e., bit data representing changes having occurred, e.g., col. 3, lines 35-65); the volatile memory is capable of maintaining the coarse grain bitmap if the communication channel is interrupted (e.g., col. 3, lines 35-65; fig. 3, els. 310, 312, 326, 320; col. 5, lines 1-45) and the coarse grain bitmap contains data representing changes to the primary storage volume (e.g., e.g., col. 3, lines 35-65).

9. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kilner, U.S. Patent No. 5,649,089, in view of Howard et al., U.S. Patent No. 6,629,198, hereinafter Howard, and further in view of Yanai et al., U.S. Patent No. 5,742,792, hereinafter Yanai.

As per claim 29, Kilner does not explicitly show the second storage volume is geographically remote from the primary storage volume. Yanai teaches the use of the second storage volume is geographically remote from the primary storage volume (e.g. col. 8, lines 35-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Yanai into the system of Kilner because it would provide complete data recovery in case of disasters destroy one physical location as taught by Yanai (e.g. col. 8, lines 35-50).

10. Claims 5, 7, 25, and 27 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Applicant's arguments filed 12/22/05 have been fully considered but they are not persuasive.

12. In the remarks the applicant argued that neither the cited portion of Howard is utilizing at least one of a MD-5 nor a SHA-1 scan of data stored in the primary storage volume but rather indicates the nature of the hash values within the hash table

The examiner disagreed with the applicant's argument because the combination of Kilner and Howard would suggest a system performing of at least one of a MD-5 and a SHA-1 scan of data stored in the primary storage volume as claimed. In particular, Kilner teaches a system performing CRC scan of data stored in the primary storage

volume (e.g. figure 1, element Active controller and col. 4, lines 1-50) but does not specifically show the use of the controllers performing at least one of a MD-5 and a SHA-1. Howard shows the use of performing at least one of a MD-5 and a SHA-1 and CRC (e.g., col. 3, lines 47-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Howard with Yanai because it would provide for a more robust hashing function, as taught by Howard, col. 3, lines 55-63.

In addition, if the applicant's meanings of MD-5 and SHA-1 are different from hash function, the applicant should provide a support from the applicant's specification.

In further discussion, in light teaching of the current specification, page 8, [0030] utilizing at least one of a MD-5 and a SHA-1 instead of CRC scans data stored in the primary storage volume and such changing without departing from the scope of the applicant's invention.

13. Applicant's arguments with respect to claims 1-10, 12, and 21-32 have been considered but are moot in view of the new ground(s) of rejection.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Denise Tran whose telephone number is (571) 272-4189. The examiner can normally be reached on Monday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571) 272-4182. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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1/20/06

